

Kaplan Runner Blade Trunnion Split Seal

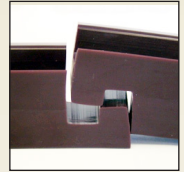
Increase Turbine Reliability, Decrease Downstream Pollution

Chesterton® Kaplan Runner Blade Trunnion Split Seals are high performance lip seals for heavy-duty, dynamic rotary and oscillating seal applications in the hydropower industry. These seals provide long-lasting sealing and protective solutions that withstand very severe application conditions.

The Chesterton Kaplan Runner Blade Trunnion Split Seal represents advanced technology of seal design combined with high performance polymer materials, which outlast conventional sealing systems even in very difficult applications.

The exclusive Chesterton seal material is made from AWC800 (95 Shore A) thermoset polymer (EU) which offers superior memory, excellent abrasion resistance, and improved durability. The polymer provides a built-in molybdenum disulfide lubricant to minimize frictional drag. The superior memory enables the seal to automatically adjust and compensate for radial cross-sectional variances commonly associated with blade droop.

This innovative Chesterton seal is designed with a positive, flared lip design that resists the rotary motion from pulling the splits apart and utilizes load pressure to join the cut ends. During blade positioning, Chesterton's seal maintains load pressure and also allows for rotary shaft movement with minimal frictional drag. When performance is measured by cost containment and efficiency, downtime can have serious consequences. Downtime is minimized with this seal because the removal of the blade is not required. In addition, only two seals need to be installed in back-to-back configuration rather than a full stacked set.



- Superior performance improves turbine efficiency
- Extends equipment life, thus improving turbine effectiveness
- Eliminates downstream leakage, making it environmentally friendly
- Effectively seals blade droop and associated issues
- Split design is field serviceable and minimizes downtime
- Eliminates oil loss and associated costs
- Direct retrofit eliminates equipment modifications

SPECIFICATIONS

Material (designation)	Size Range mm (inch)	Temperature	Pressure MPa (psi)	Speed m/s (ft/min)
AWC800 (EU)	6 mm – 2540 mm (1/4" – 100")	-50°C – 85°C (-60°F – 185°F)	103.5 (15000)	1 (200)

Features

- **Downtime is minimized:** removal of the blade is not required.
- **Only two seals need to be installed** (rather than a full stacked set).
- **The seal maintains load pressure during blade positioning.**
- **Internal seal lubrication allows for rotary shaft movement with almost no frictional drag on the seal.**
- **Blade and seal maintain positions for maximum sealing.**
- **Made to order:** geometry and dimensions of the seal is according to actual hardware arrangement and dimensions.
- **Back-to-back configuration:** keeps contaminants out of hub; keeps oil in.
- **Robust seal design:** prevent excessive stretching, bunching, or twisting of the seal rings during installation.
- **Multiple sealing point on static side of the seal:** in case of corroded seal cavity surface, the multiple sealing points can provide tighter sealing.

Typical Material Characteristics of AWC800 (EU) Polymer		
Property	Test Method	Metric (Imperial)
Tensile Strength	ASTM D-412	34.5 MPa (5000 psi)
100% Modulus	ASTM D-412	12.4 MPa (1800 psi)
300% Modulus	ASTM D-412	23.4 MPa (3400 psi)
Elongation at Break	ASTM D-412	400%
Specific Gravity	ASTM D-297	1.14
Tear Strength (Die C)	ASTM D-624	87.5 kN/m (500 lb/in)
Compression Set (Method B)	ASTM 395	22%
Tear Strength (Split)	ASTM D-470	26.2 kN/m (150 lb/in)
Tear Strength (Graves), Die C	ASTM D-624	87.5 kN/m (500 lb/in)
Resilience (Rebound)	ASTM D-2632	40%
Abrasion Resistance, NBS Index	ASTM D-630	400
Hardness	ASTM D-2240	95 Shore A
Material Designation/Color	–	EU/Red
Temperature	–	from -50 to +85 °C (from -60 to 185° F)
Pressure	–	to 103.5 MPa (15000 psi)
Surface Finish (Static/Dynamic)	–	0.7 – 1.1 / 0.2 – 0.6 µm (30-46 / 8-24 µin)
Extrusion Resistance	–	to 0.76 mm @ 211 kg/cm ²
Chemical Compatibility (ISO 6743-4)	–	HL, HM, HV, HFA-E
Shelf Life	–	In excess of 25 years
Coefficient of Friction (with MoS ₂)	–	dry 0.18 – 0.22 µ
		lubricated 0.08 – 0.10 µ

Note: The material properties were obtained under controlled laboratory conditions. The data and information are intended as only a guide to be used at your discretion and risk. A.W. Chesterton specifically disclaims any and all direct and indirect damages or losses resulting from the use of any information, data, or products described.

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